CE REV 000A

Quick®

High Quality Nautical Equipment

SBC NRG+

MINI POWER

SBC 140 NRG+ FR

LOW POWER

SBC 250 NRG+ FR

SBC 300 NRG+ FR

SBC 365 NRG+ FR

SBC 500 NRG+ FR

QUICK® SPA

SBC NRG+ SERIES BATTERY CHARGER

The long experience we have in the nautical field has given us the ability to evolve the range of SBC battery chargers, now called NRG+, with superior performance to those currently on the market.

The advantages which the SBC NRG+ battery chargers offer, are:

- Three stage IUoU battery charging.
- High efficiency.
- Multiple outputs in order to charge more groups of batteries.
- Differentiated charging for open or sealed liquid electrolite, Gel, AGM, Optima®.
- Integrated output fuses inside the battery chargers.
- Capacity of supplying full power with low AC mains voltage.
- Low residual fluctuation on output.
- Universal AC supply input 264 ÷ 83 Vac, 45 ÷ 66 Hz.
- Power factor (cos φ) equal to 1.
- Compatible with the generators.
- Short circuit, overloading, output overvoltage and overheating protection.
- Can work in a wide range of ambient temperatures.
- Variable speed for the cooling fan.

INSTALLATION

The installation of the battery charger must be carried out by qualified personnel.

⚠ **BEFORE USING THE BATTERY CHARGER CAREFULLY READ THIS USER'S MANUAL. IF IN DOUBT, CONTACT YOUR NEAREST DEALER OR "QUICK®" CUSTOMER SERVICE.**

☞ In case of discordance or errors in translation between the translated version and the original text in the Italian language, reference will be made to the Italian or English text.

☞ This device was designed and constructed for use on recreational crafts.
Other forms of use are not permitted without written authorization from the company Quick®.

⚠ **THE BATTERY CHARGERS ARE DESIGNED FOR FIXED INTERNAL INSTALLATIONS ONLY.**

⚠ **WARNING:** this appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

⚠ **WARNING:** children should be supervised to ensure that they do not play with the appliance.

"Quick®" battery chargers have been designed and made for the reasons described in this user's manual. The "Quick®" Company does not accept any responsibility for direct or indirect damage caused by improper use of the equipment, bad installation or by possible errors occurring in this manual.

OPENING OF THE BATTERY CHARGER BY UNAUTHORISED PERSONNEL MAKES THE WARRANTY VOID.

THE PACKAGE CONTAINS: battery charger - conditions of warranty - user's manual - cable terminals (to be used for connection to the output terminals).

NECESSARY EQUIPMENT FOR INSTALLATION

Use the batteries and cables on the output terminals as specified in the following table:

MODEL	SBC 140 NRG+ FR	SBC 250 NRG+ FR	SBC 300 NRG+ FR	SBC 500 NRG+ FR	SBC 365 NRG+ FR
Battery voltage	12 V				24 V
Battery capacity	55 ÷ 120 Ah	110 ÷ 250 Ah	140 ÷ 300 Ah	180 ÷ 400 Ah	65 ÷ 150 Ah
Minimum output cable size	6 mm²	10 mm²	10 mm²	16 mm²	6 mm²
Number of battery cells	6				12

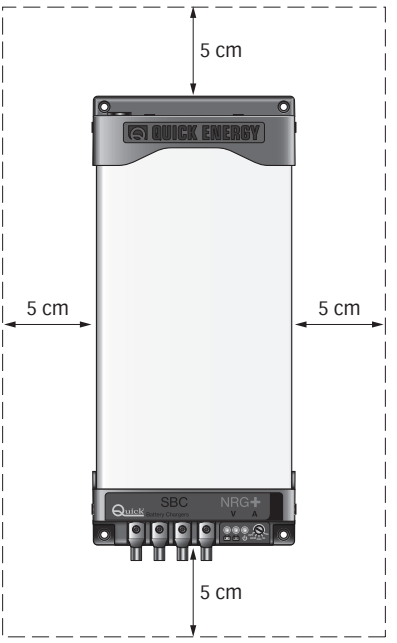
The cables connected to the output terminals have a maximum length of 4 metres.

⚠ **WARNING:** the battery charger must be used only with re-chargeable lead/liquid electrolytic batteries (open or sealed), Gel, AGM, Optima® .

⚠ **WARNING:** the battery charger can not be used to recharge non rechargeable batteries.

INSTALLATION SITE

Install the battery charger as close as possible to the batteries in a dry and airy spot, to allow the correct operation of the device at full power.
The battery charger can be installed on a horizontal surface or vertical wall paying attention that the output connector faces downwards.
The battery charger must be fixed to the support surface with screws strong enough to support its weight, paying attention that they do not weaken or cause cracks to the boat structure.
Vertical installation is recommended since the natural convection of the heat will favour the cooling of the device.
The perimeter of the battery charger (excluding the support base) must be kept at a distance from walls or objects by a minimum of 5 cm.



EQUIPMENT SUPPLY AND INSTALLATION

The equipment already includes a AC power cord. For connections to an AC mains see fig.1A. Before powering up the battery charger check that the power supply voltage, described on the rating label (fig.2B), corresponds to that supplied by the AC mains.

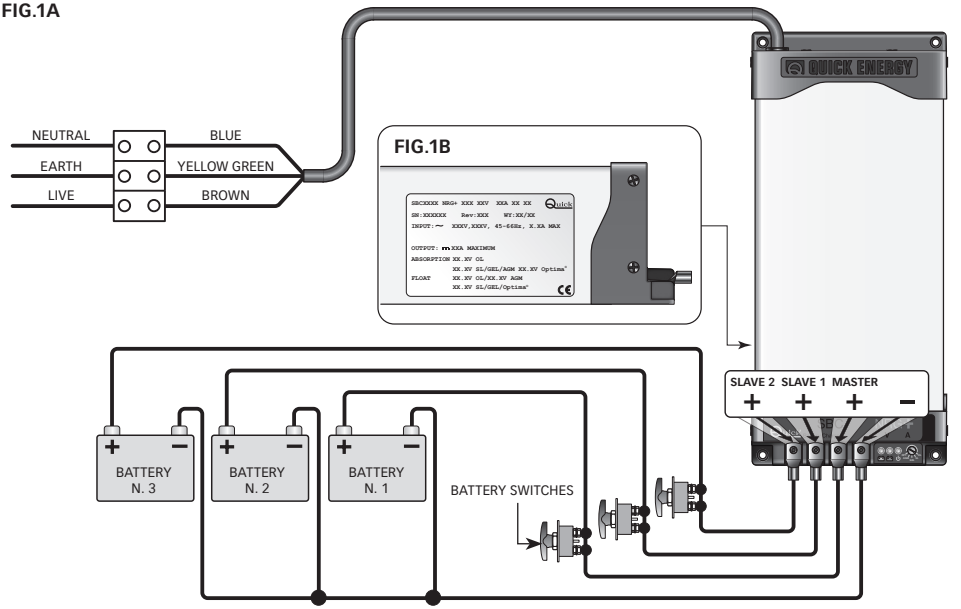
An overvoltage category III switch must be installed in the electrical circuit for the sole use of switching the equipment ON/OFF.

The connections to the AC mains must be carried out according to local electrical codes.

⚠ **WARNING:** before connecting or disconnecting the battery charger's AC cord from the AC mains, please make sure it is disconnected by bipolar switch.
Before connecting or disconnecting the DC wires from the battery charger's output terminals, please ensure that the device is disconnected by means of bipolar switch from the AC mains and by means of a battery isolator from the batteries.

⚠ **WARNING:** in cases where the AC power cord could be damaged, have this changed by a "Quick®" service centre. In order to avoid accidents, the equipment must only be opened by authorised personnel.

FIG.1A



⚠ **WARNING:** during charge, batteries can generate explosive gases, therefore avoid sparks or naked flames. Provide adequate ventilation to the battery area whilst charging.

⚠ **WARNING:** before connecting the batteries check the polarity of the cables from the battery. Reversing the polarity, could seriously damage the battery charger even if protected by fuses.

The positive terminal of the battery or of the group of batteries must be connected to one of the positive terminals of the battery charger.

The negative terminal of the battery or of the group of batteries must be connected to the negative terminal of the battery charger (fig. 1A). To make the connections use the cable terminals supplied with the equipment.

If the installation has only one or two groups of batteries, always connect the output marked "MASTER". This is the main output of the battery charger. It is advisable to connect the group of batteries which are used more often (typically the service group) to the MASTER output terminal.

The positive output terminals that are not used must be kept free (do not bridge the terminals).

⚠ **WARNING:** the use of inadequate size cables and the incorrect connection of terminals or electrical joints may result in dangerous overheating of the connecting terminals or cables.

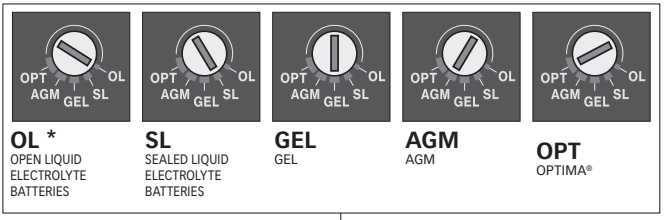
BATTERY TYPE SELECTION

The battery charger can be set to optimize the charge according to the type of battery used.
The selection of the type of charge is made via the rotary switch placed in the terminal board area, as indicated in Fig. 2.

⚠ **WARNING:** select the battery type only when the battery charger is switched off.

FIG.2

SELECTION OF THE CHARGING MODE USING THE SELECTOR



* Factory setting

OPERATION

When the battery charger is switched on, it automatically selects the optimum charge mode to best suit the batteries or load connected. The battery charger has a loading characteristic of the IUoU type.

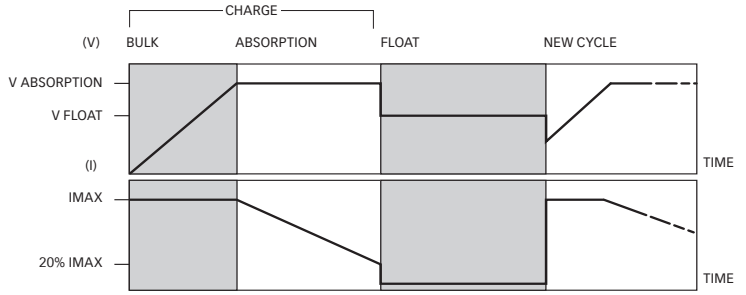
CHARGING CHARACTERISTICS

Charging procedure takes place in 3 phases:

BULK phase (constant current)
The batteries need more current than the battery charger can supply. Current is limited to the maximum rated output or to a lower value if factors which determine a power reduction of the device are present. The battery charger can enter this phase during start-up, when the batteries are low or when a high load is connected.

ABSORPTION phase (constant voltage)
The battery charger charges the batteries at a constant ABSORPTION voltage supplying the current needed when the current requested is greater than the transition threshold between ABSORPTION and FLOAT and less than the maximum output value or at a lower value if factors which determine a power reduction of the device are present.

FLOAT phase (maintenance)
The battery charger charges the batteries at constant FLOAT voltage when the current required is less than the transition threshold between ABSORPTION and FLOAT. In this phase, as the batteries reach maximum capacity, they will tend to absorb increasingly low current. This float phase will allow the batteries to be on charge without risking overload.

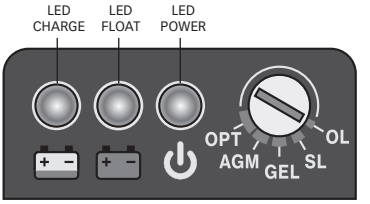


The transition threshold between **ABSORPTION** and **FLOAT** is equal to 20% of the maximum nominal value of the output current.

CONTROL PANEL

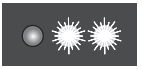
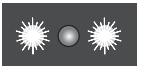
The control panel is made up of three LEDs :

- **LED POWER**
- **LED FLOAT**
- **LED CHARGE**

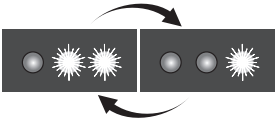
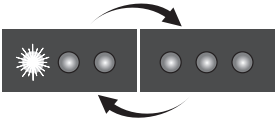
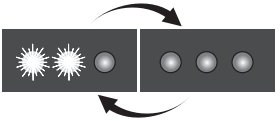
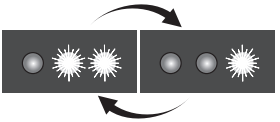
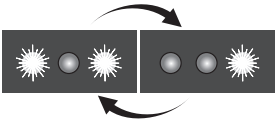
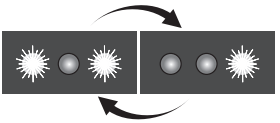


The information supplied by the LEDs are listed below:

IN THE ABSENCE OF PROBLEMS

LED STATE		DESCRIPTION
	**STEADY LIGHT** **2 LEDs on**	The battery charger is in the FLOAT phase.
	**STEADY LIGHT** **2 LEDs on**	The battery charger is in CHARGE status (BULK or ABSORPTION phase).

IN THE PRESENCE OF PROBLEMS

LED STATE		DESCRIPTION
	**SLOW FLASH** **2 LEDs on alternated with 1 LED on**	**Output short circuit or overload** Check the output wiring, the battery bank and the equipment connected to the battery charger.
	**SLOW FLASH** **1 LED on alternated with 3 LEDs off**	**Overtemperature** The ambient temperature is higher than +70°C. The battery charger suspends the output power supply, which will start again once the ambient temperature is back to a lower value than +50°C.
	**QUICK FLASH** **2 LEDs on alternated with 3 LEDs off**	**Output overvoltage** The battery charger, due to an internal malfunction, supplied for a very short time a higher voltage than the rated value. The problem requires a check by a Quick® customer service.
	**QUICK FLASH** **2 LEDs on alternated with 1 LED on**	**No AC (FLOAT)** The battery charger stops delivering output power, which will be delivered again once the mains voltage goes back to a value above 83 VAC.
	**QUICK FLASH** **2 LEDs on alternated with 1 LED on**	**No AC (ABSORPTION)** The battery charger stops delivering output power, which will be delivered again once the mains voltage goes back to a value above 83 VAC.
	**SLOW FLASH** **2 LEDs on alternated with 1 LED on**	**High temperature** Ambient temperature is above +50 °C. The battery charger linearly limits the maximum value of output current according to the temperature. Current limitation due to temperature will end once the ambient temperature goes back to a value below +50 °C.

MAINTENANCE

The battery charger does not need any maintenance. To ensure optimum performance from the equipment, once a year check the cables and the electrical connections.

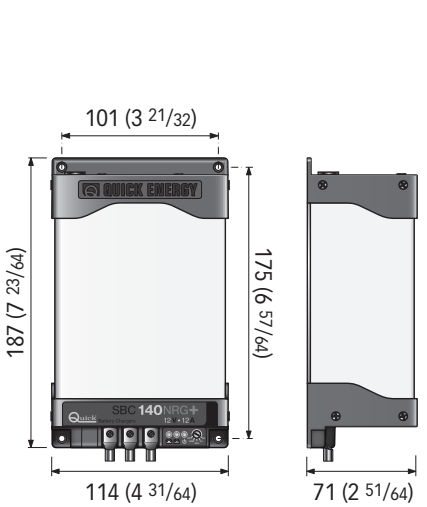
TECHNICAL DATA

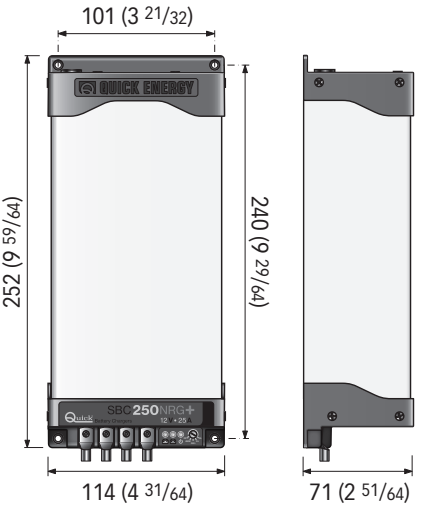
MODEL	SBC 140 NRG+ FR	SBC 250 NRG+ FR	SBC 300 NRG+ FR	SBC 500 NRG+ FR	SBC 365 NRG+ FR
OUTPUT CHARACTERISTICS					
Maximum output current [1]	12 A	25 A	30 A	40 A	15 A
Charge ABSORPTION voltage	• 14,1 Vdc EL open • 14,4 Vdc EL sealed / Gel / AGM • 14,7 Vdc Optima®				• 28,2 Vdc EL open • 28,8 Vdc EL sealed / Gel / AGM • 29,4 Vdc Optima®
Charge FLOAT voltage	• 13,4 Vdc EL open • 13,6 Vdc AGM • 13,8 Vdc EL sealed / Gel / Optima®				• 26,8 Vdc EL open • 27,2 Vdc AGM • 27,6 Vdc EL sealed / Gel / Optima®
DC absorption from the batteries [2]	< 3,5 mA				
Residual ripple [3]	< 100 mV RMS				
Charging characteristics	Automatic in three stages IUoU				
Number of outputs [4]	2	3			
INPUT CHARACTERISTICS					
Supply voltage	264 ÷ 83 Vac, with power reduction under 108 Vac				
Frequency	45÷66 Hz				
Maximum absorption (230/240 Vac) [5]	0,9 A	1,8 A	2,2 A	2,7 A	2,0 A
Maximum absorption (120 Vac) [6]	1,7 A	3,4 A	4,2 A	5,3 A	4,0 A
Power factor (cos φ) [5]	1,00				
Efficiency [5]	≥ 83%	≥ 84%	≥ 85%	≥ 87%	≥ 86%
PROTECTIONS					
Reverse polarity [7]	Yes, through fuse				
Overload	Yes				
Output short circuit	Yes				
Overvoltage in output	Yes				
Overheating	Yes				
AMBIENT CHARACTERISTICS					
Operating temperature	-15 ÷ +70 °C, with linear power reduction over +45 °C				
Noise level	< 43 dbA @ 1 m	< 45 dbA @ 1 m			
Cooling	Variable fan speed				
Humidity	Max. 95% RV without condensation				
CASE					
Material	Aluminium				
Dimensions (WxHxD)	114 x 187 x 71 mm	114 x 252 x 71 mm	114 x 252 x 71 mm	114 x 275 x 71 mm	114 x 252 x 71 mm
Weight	1,1 kg	1,6 kg	1,6 kg	1,8 kg	1,6 kg
GENERAL					
Safety standard	EN 60335-2-29				
EMC Standard	EN 55022/B - FCC TITLE 47 PART 15 SUBPART B CLASS B				

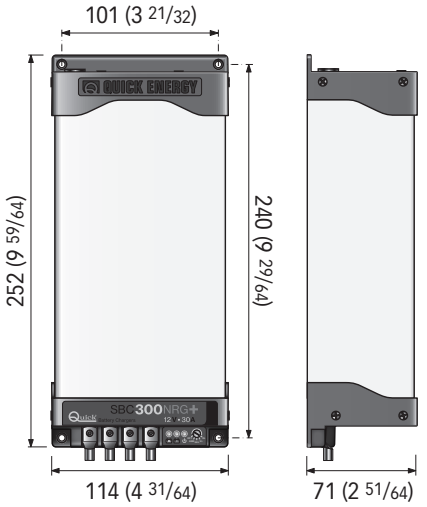
(1) Maximum rated value at normal use or in short circuit.
(2) With battery charger not supplied by the AC network.
(3) At 50% of the maximum rated output current on resistive load.
(4) Each output can supply the maximum value of nominal current. The sum of the currents supplied from each output can not exceed the maximum nominal value of the equipment.
(5) With supply voltage equal to 230 Vac and output current equal to the maximum nominal value.
(6) With supply voltage equal to 120 Vac and output current equal to the maximum nominal value.
(7) Protection may be inefficient in some operative conditions.

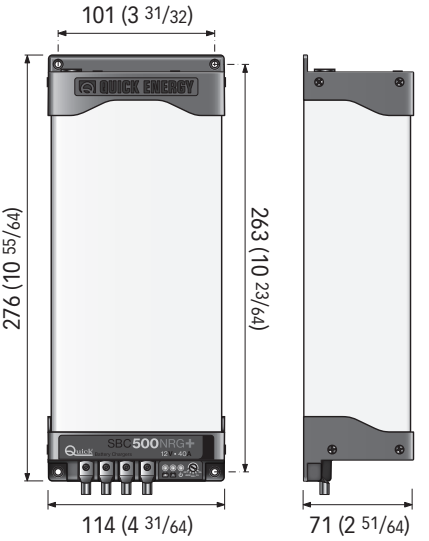
DIMENSIONS mm (inch)

SBC NRG+ 12V









DIMENSIONS mm (inch)

SBC NRG+ 24V